

Abstract Submitted
for the OSS11 Meeting of
The American Physical Society

The construction and characterization of optical traps for manipulating microscopic particles TIFFANY THOMPSON, ERNEST BEHRINGER, Eastern Michigan University — Optical traps use tightly focused laser light to manipulate microscopic particles and have applications in nanofabrication, characterizing DNA, and *in vitro* fertilization [1]. We will describe the design, construction, and characterization of an optical trap that is capable of trapping and imaging $3\ \mu\text{m}$ polystyrene spheres using a 12 mW HeNe laser. The design was based on previous work [2,3] describing how to build affordable optical traps. We will discuss trapping forces and their calibration.

- [1] D.G. Grier, “A Revolution in Optical Manipulation,” *Nature* **424**, 810-816 (2003).
- [2] S.P. Smith et al., “Inexpensive optical tweezers for undergraduate laboratories,” *Am. J. Phys.* **67** (1), 26-35 (1999).
- [3] J. Bechhoefer *et al.*, “Faster, cheaper, safer optical tweezers for the undergraduate laboratory,” *Am. J. Phys.* **70** (4), 393-400 (2001).

Ernest Behringer
Eastern Michigan University

Date submitted: 14 Mar 2011

Electronic form version 1.4